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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/653,411 | 08/31/2000 | Whonchee Lee | M4065.0361/P361 | 5349 |

24998 7590 06/18/2004

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| EXAMINER | |
|---|---|
| NGUYEN, JOSEPH H | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 2815 | |

DATE MAILED: 06/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 09/653,411 | LEE ET AL. | |
| | Examin r | Art Unit | |
| | Joseph Nguyen | 2815 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspond nce address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE ____ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *06 February 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *39-51* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *39-51* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *31 August 2000* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *02/06/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 39- 47, 49-50 are rejected under 35 U.S.C. 102(b) as being anticipated by Lee et al (2001/0025976 A1).

Regarding claim 39, Lee et al discloses on figure 5 a semiconductor device comprising a substrate 31 and at least one electron mechanically polished metal layer 53 formed over said substrate 31, said electro mechanically polished metal layer's surface has been electro-mechanically polished against a second surface while submersed in an electric bath.

It should be noted that the term "electro-mechanical polished against a second surface while submersed in an electric bath" merely recites product by process and does not structurally distinguish the metal layer from the structure taught by Lee et al.

Regarding claim 40, Lee et al disclose on figure 5 the metal layer 53 comprises at least one metal selected from the group consisting of noble metals, noble metal alloys, refractory metals and refractory metal alloys.

Regarding claim 41, Lee et al disclose on figure 5 the device comprises a capacitor with at least one electro mechanical polished metal layer 53.

Regarding claim 42, Lee et al disclose on figure 5 the electro-mechanical polished metal layer 53 is bottom electrode of said capacitor.

Regarding claim 43, Lee et al disclose on figure 5 a semiconductor device comprising a bottom electrode 53 formed over a substrate 31; an insulating layer 55 formed over the bottom electrode; and a top electrode 57 formed over the insulating layer 55, wherein at least one electrode surface comprises an electro mechanically polished surface that has been electro-mechanically polished against a second surface while submersed in an electric bath.

It should be noted that the term "electro-mechanical polished against a second surface while submersed in an electric bath" merely recites product by process and does not structurally distinguish the metal layer from the structure taught by Lee et al.

Regarding claim 44, Lee et al disclose on figure 5 the capacitor is a MIM capacitor.

Regarding claim 45, Lee et al disclose on figure 5 at least one electrode 53 comprises a metal selected from the group consisting of noble metals, noble metal alloys, refractory metals and refractory metal alloys.

Regarding claim 46, Lee et al disclose on figure 5 at least one electrode surface is a surface of the bottom electrode 53.

Regarding claim 47, Lee et al disclose on figure 5 the bottom electrode 53 comprises a platinum electrode.

Regarding claim 49, Lee et al discloses on figure 5 a semiconductor device comprising a substrate 31; and at least one electro-mechanically polished metal layer 53 consisting of a noble metal formed.

Regarding claim 50, Lee et al discloses on figure 5 a semiconductor device comprising a bottom electrode 53 formed over a substrate 31; an insulating layer 55 formed over said bottom electrode; and a top electrode 57 formed over said insulating layer, wherein at least one electrode surface comprises an electro mechanically polished noble metal surface.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 48 and 51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al in view of Sandhu et al.

Regarding claims 48 and 51, Lee et al disclose substantially all the structure set forth in the claimed invention except a memory device electrically coupled to a processor. However, Sandhu et al disclose on figure 20 a memory device 1100 electrically coupled to a processor. In view of such teaching, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Lee et al

by having a memory device electrically coupled to a processor for the purpose of improving the performance of the integrated circuits.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph Nguyen whose telephone number is (571) 272-1734. The examiner can normally be reached on Monday-Friday, 7:30 am- 4:30 pm

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on (571) 272-1664. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306 for regular communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

JN
June 17, 2004

JEROME JACKSON
PRIMARY EXAMINER